

Appl. No.: 10/043,577
Amdt. dated 08/31/2005
Reply to Official Action of May 31, 2005

REMARKS/ARGUMENTS

Applicant appreciates the thorough examination of the present application, as evidenced by the first Official Action. Applicant also appreciates the indication in the first Official Action that dependent Claims 5-11, 16-22 and 25-30 are allowable. However, the first Official Action rejects Claims 1, 12 and 23 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,493,409 to Lin et al.; and rejects Claims 2-4, 13-15 and 24 as being unpatentable over the Lin patent in view of U.S. Patent No. 4,700,360 to Visser. As explained below, Applicant respectfully submits that the first Official Action fails to establish *prima facie* obviousness of the claimed invention of independent Claims 1, 12 and 23. As also explained below, Applicant respectfully submits that the claimed invention of Claims 2-4, 13-15 and 24 is patentably distinct from the Lin and Visser patents, taken individually or in combination. Accordingly, Applicant traverses the rejections of the claims as being unpatentable over the Lin patent, or over the Lin patent in view of the Visser patent. In view of the remarks presented herein, Applicant respectfully requests reconsideration and allowance of all of the pending claims of the present application.

A. The Official Action Fails to Establish Prima Facie Obviousness of Claims 1, 12 and 23

Initially, Applicant respectfully submits that the Official Action fails to establish *prima facie* obviousness of the claimed invention. As stated in the MPEP, all of the elements of a claimed invention must be taught or suggested by the prior art to establish *prima facie* obviousness of a claimed invention. MPEP § 2143.03 (*citing In re Royka*, 490 F.2d 981 (CCPA 1974)). In the instant case, however, the Official Action fails to allege prior art, including the Lin patent or the Visser patent, individually or in combination, that teach or suggest all of the elements of the claimed invention of the present application. More particularly, for example, nowhere does the Official Action allege any prior art that teach or suggest, individually or in combination, a QAM decoder including one or more integrators capable of integrating one or more QAM signals, as recited by independent Claim 1 and similarly independent Claims 12 and 23. Applicant notes that the Official Action does appear to allege that it would have been

Appl. No.: 10/043,577
Amdt. dated 08/31/2005
Reply to Official Action of May 31, 2005

obvious to one skilled in the art to modify an integrator disclosed by the Lin patent to integrate QAM signal(s). Nonetheless, the Official Action fails to allege any prior art disclosing that feature of the claimed invention.

As further stated in the MPEP, establishing *prima facie* obviousness of a claimed invention also requires some suggestion or motivation to modify the references or to combine reference teachings." *Id.* at § 2143.01. With respect to independent Claims 1, 12 and 23, the Official Action does allege that it would be obvious to modify an integrator disclosed by the Lin patent to integrate QAM signal(s). The Official Action does not allege, however, a motivation for one skilled in the art modifying the Lin system in this manner.

Applicant therefore respectfully requests that the Examiner reconsider the claimed invention in light of all of the words of the claimed invention. *Id.* at § 2143.03 (citing *In re Wilson*, 424 F.2d 1382, 1385 (CCPA 1970)). Then, in the absence of a finding that the prior art teach or suggest all of the elements of the claimed invention, and a suggestion or motivation for combining the elements taught by such prior art, Applicants request allowance of all of the pending claims of the present application.

B. Claims 1-4, 12-15, 23 and 24 are Patentable over Lin and Visser

The primary reference, the Lin patent, provides a carrier recovery, symbol timing, and carrier phase tracking system and method suitable for use in connection with a dual-mode QAM/VSB (quadrature amplitude/vestigial sideband modulation) receiver system. As disclosed, carrier and phase recovery systems operate on complex signals representing symbols having the same time stamp for each phase error term. In-phase signals are sampled twice a symbol at the in-phase symbol sampling time and at the quadrature-phase symbol sampling time. The signals are de-multiplexed to generate I and X_I data streams, where I represents the in-phase sampling time signals and X_I represents mid-symbol point sample times. A similar procedure is carried out on the quadrature-phase signals. When the in-phase signal is de-multiplexed to generate a symbol I, the quadrature-phase signal is de-multiplexed to generate its mid-symbol point X_Q . Both I and Q are decoded in a decision device to define a symbol error term, which is combined with the opposite mid-symbol signal to define a phase error term P_I and P_Q for each rail. In both

Appl. No.: 10/043,577
Amdt. dated 08/31/2005
Reply to Official Action of May 31, 2005

cases, the symbol (I) decision (\hat{I}), and mid-symbol (X_0) in each phase error term (P_i) computation will have the same prime index.

The Visser patent discloses a system for converting analog input waveforms into digital signals. As disclosed, the system includes an extrema coder for encoding only the times of occurrence of extrema (i.e., maximum or minimum values) of an input analog waveform, including the times of occurrence of naturally occurring or injected substantially random, broadband noise. The output of the extrema coder is coupled to an interface circuit, which in turn is coupled to a digitizing stage. The digitizing stage can comprise a delta modulator, PCM encoder or another type of analog-to-digital (A/D) converter. When the digitizing stage comprises a delta modulator, the delta modulator can include components functioning as a comparator to facilitate A/D conversion of the analog output from the interface circuit.

Independent Claim 1 (and similarly independent Claims 12 and 23) of the present application recites a decoder for decoding one or more QAM signals into one or more n -bit digital signals. As recited, the decoder includes one or more integrators capable of integrating the QAM signal(s). In addition, the decoder includes one or more tapped-delay line filters including one or more delay elements. In this regard, the tapped-delay line filter(s) are capable of receiving the integrated QAM signal(s), and thereafter outputting a representation of each bit of the n -bit digital signal(s).

In contrast to the claimed invention, and as conceded in the Official Action, the Lin patent does not teach or suggest a decoder including integrator(s) for integrating QAM signal(s). Accordingly, as the Lin patent does not teach or suggest integrator(s) for integrating QAM signal(s), in contrast to the allegations in the Official Action, the Lin patent also does not teach or suggest tapped-delay line filter(s) capable of receiving the integrated QAM signal(s), as also recited by the claimed invention. Likewise, Applicant respectfully submits that the Visser patent does not teach or suggest these features of the claimed invention. And as neither the Lin patent nor the Visser patent individually teach or suggest the integrator(s) or tapped-delay line filter(s) of the claimed invention, the combination of the Lin patent and Visser patent also does not teach or suggest the claimed integrator(s) or tapped-delay line filter(s).

Appl. No.: 10/043,577
Amtd. dated 08/31/2005
Reply to Official Action of May 31, 2005

Applicant therefore respectfully submits that the claimed invention of independent Claims 1, 12 and 23 is patentably distinct from the Lin and Visser patents, taken individually or in combination. As dependent Claims 2-4, 13-15 and 24 depend from and include all the limitations of respective ones of independent Claims 1, 12 and 23, Applicant respectfully submits that the claimed invention of dependent Claims 2-4, 13-15 and 24 is also patentably distinct from the Lin and Visser patents, taken individually or in combination, for at least the same reasons given above with respect to independent Claims 1, 12 and 23. In addition, Applicant respectfully submits that various ones of dependent Claims 2-4, 13-15 and 24 include features further patentably distinct from the Lin and Visser patents, taken individually or in combination.

For example, dependent Claims 2 and 4 (and similarly dependent Claims 13, 15 and 24), then, further recite that the decoder includes one or more comparators (or n comparators) capable of receiving the representation of each bit of the n -bit digital signal(s), and thereafter outputting each bit of the n -bit digital signal(s) based upon a comparison of the representation of each bit to a predetermined threshold. As conceded in the Official Action, the Lin patent does not teach or suggest comparators similar to those recited by dependent Claims 2 and 4 (and similarly dependent Claims 13, 15 and 24). Nonetheless, the Official Action alleges that the Visser patent discloses similar comparators, and that it would have been obvious to one skilled in the art to modify the Lin system with the comparators of the Visser patent to disclose the claimed invention of dependent Claims 2 and 4 (and similarly dependent Claims 13, 15 and 24).

Applicant respectfully submits, however, that even if the Lin and Visser patents disclose the respective features of the claimed invention as alleged in the Official Action, one skilled in the art would not be motivated to combine the respective features of the Lin and Visser systems. In this regard, the Visser patent discloses a system including a digitizing stage, which can comprise a delta modulator, PCM encoder, or any other type of analog-to-digital conversion stage. Column 4, line 65 – column 5, line 1. In this regard, when the digitizing stage comprises a delta modulator, the delta modulator includes elements forming as a comparator for at least partially effectuating the function of the delta modulator, namely, performing an analog-to-digital conversion.

Appl. No.: 10/043,577
Amdt. dated 08/31/2005
Reply to Official Action of May 31, 2005

Similar to the Visser system, the Lin patent similarly discloses a receiver system that includes an A/D converter for digitizing analog signals. As shown and described by the Lin patent, the A/D converter is located at the front end of the receiver system such that the digitized signals can thereafter be processed (i.e., demodulated and filtered, and error corrected). Column 5, lines 9 – 20. Accordingly, Applicant respectfully submits that one skilled in the art would not be motivated to modify the Lin system to include the comparator of the Visser system since the Lin system has no need for a comparator to at least partially digitize signals already digitized by the A/D converter of the Lin system.

Thus, Applicant respectfully submits that the claimed invention of Claims 1-4, 12-15, 23 and 24 is patentably distinct from the Lin and Visser patents, taken individually or in combination. And as such, Applicant also respectfully submits that the rejection of Claims 1, 12 and 23 under 35 U.S.C. § 103(a) as being unpatentable over the Lin patent, and the rejection of Claims 2-4, 13-15 and 24 as being unpatentable over the Lin patent in view of the Visser patent, is overcome.

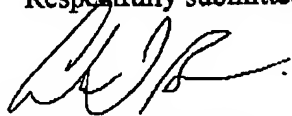
Appl. No.: 10/043,577
Amdt. dated 08/31/2005
Reply to Official Action of May 31, 2005

CONCLUSION

In view of the remarks presented above, Applicant respectfully submits that the present application is in condition for allowance. As such, the issuance of a Notice of Allowance is therefore respectfully requested. In order to expedite the examination of the present application, the Examiner is encouraged to contact Applicant's undersigned attorney in order to resolve any remaining issues.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,

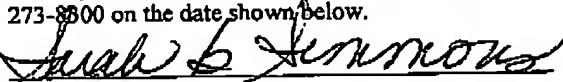


Andrew T. Spence
Registration No. 45,699

Customer No. 00826
ALSTON & BIRD LLP
Bank of America Plaza
101 South Tryon Street, Suite 4000
Charlotte, NC 28280-4000
Tel Charlotte Office (704) 444-1000
Fax Charlotte Office (704) 444-1111

CERTIFICATION OF FACSIMILE TRANSMISSION

I hereby certify that this paper is being facsimile transmitted to the US Patent and Trademark Office at Fax No. (571) 273-8800 on the date shown below.


Sarah B. Simmons

August 31, 2005
Date